What is claimed is:

1. A DNA chip comprising:

a substrate;

a high reflection region having a higher reflectance than that of the substrate, the high reflection region comprising a first film having a relatively low refractive index and a film having a relatively high refractive index stacked on a region of the substrate;

a low reflection region having a lower reflectance than that of the high reflection region, the low reflection region comprising a second film having a relatively low refractive index positioned around the high reflection region on the substrate; and

a DNA probe fixed on the high reflection region.

2. The DNA chip of claim 1, wherein the high reflection region is configured such that the first low refractive index film and the high refractive index film are stacked alternately on the substrate.

3. The DNA chip of claim 1, wherein the low reflection region is configured such that the second low refractive index film is stacked on the substrate.

4. The DNA chip of claim 1, wherein a thickness of the high refractive index film in the high reflection region is approximately 70% ~130% of $\lambda_F/4n_H$, where λ_F is an emission wavelength of a fluorescent dye labeled to a target DNA, n_H and n_L are refractive index of the high refractive index film and the refractive index of the first low refractive index film, respectively, and a thickness of the second low refractive index film in the low reflection region is approximately 70% ~130% of $\lambda_F/4n_L$.

5. The DNA chip of claim 4, wherein a thickness of the high refractive index film is $\lambda_F/4n_H$, and a thickness of the first low refractive index film is $\lambda_F/4n_L$.

6. The DNA chip of claim 1, wherein a thickness of the first low refractive index film is an odd multiple of $\lambda_F/4n_L$, where λ_F is an emission wavelength of a fluorescent dye labeled to the target DNA and n_L is a refractive index of the first low refractive index film.

7. The DNA chip of claim 1, wherein a high refractive index film is formed of a metal oxide selected from the group consisting of TiO_2, ZrO_2, CeO_2 and Ta_2O_5 and having a refractive index range of 2.0~2.5.

8. The DNA chip of claim 1, wherein at least one of the first and second low refractive index films is formed of silicon oxide.

9. The DNA chip of claim 1, wherein the substrate is formed of a material selected from the group consisting of silicon wafer, glass, quartz and plastic.

10. The DNA chip of claim 1, further comprising a coating film formed on surfaces of the high reflection region and the low reflection region.

11. The DNA chip of claim 10, wherein the coating film is formed of one of an amine radical and an aldehyde radical.

12. The DNA chip of claim 1, further comprising a plurality of said high reflection regions arranged in a microarray.

13. The DNA chip of claim 1, wherein in said high reflection region said first film having a relatively low refractive index is positioned between said substrate and said film having a relatively high refractive index.

14. The DNA chip of claim 1, wherein said high reflection region comprises a plurality of said first films having a relatively low refractive index and a plurality of said films having a relatively high refractive index, and wherein said plurality of said high refractive index films and said first low refractive index films are stacked alternatively on said substrate.

15. The DNA chip of claim 1, wherein said low reflection region comprises a plurality of said second films.

16. The DNA chip of claim 1, wherein at least a portion of said second film in said low reflection region is part of said first film in said high reflection region.

17. The DNA chip of claim 1, wherein a thickness of said second film having a relatively low refractive index is the same as a total thickness of said film having a relatively high refractive index and said first film having a relatively low index of said high reflection region.

18. The DNA chip of claim 1, wherein the low reflection region has a lower reflectance than that of the substrate.

19. A DNA chip comprising:

a substrate;

a high reflection region having a higher reflectance than that of the substrate, wherein said high reflection region comprises a plurality of first films having a relatively low refractive index and a plurality of films having a relatively high refractive index alternatively stacked on a region of the substrate; and

a low reflection region having a lower reflectance than that of the high reflection region, wherein said low reflection region comprises a second film having a relatively low refractive index which surrounds the high reflection region on the substrate.

20. The DNA chip of claim 19, wherein the low reflection region has a lower reflectance than that of the substrate.

21. The DNA chip of claim 19, wherein a thickness of at least one of the high refractive index films in the high reflection region is approximately 70% ~130% of $\lambda_F/4n_H$, where λ_F is an emission wavelength of a fluorescent

dye labeled to a target DNA, n_H and n_L are refractive index of the at least one high refractive index film and the refractive index at least one of the first low refractive index films, respectively, and a thickness of at least one second low refractive index films in the low reflection region is approximately 70% ~130% of $\lambda_F/4n_L$.

22. A DNA chip comprising:

a substrate;

a high reflection region having a higher reflectance than that of the substrate, wherein said high reflection region comprises at least one first film having a relatively low refractive index and at least one film having a relatively high refractive index positioned on a region of the substrate; and

a low reflection region having a lower reflectance than that of the high reflection region, wherein said low reflection region comprises a second film having a relatively low refractive index which surrounds the high reflection region on the substrate,

wherein a thickness of the high refractive index film in the high reflection region is approximately 70% ~130% of $\lambda_F/4n_H$, where λ_F is an emission wavelength of a fluorescent dye labeled to a target DNA, n_H and n_L are refractive index of the high refractive index film and the refractive index of the first low refractive index film, respectively, and a thickness of the

second low refractive index film in the low reflection region is approximately 70% ~130% of $\lambda_F/4n_L$.

23. The DNA chip of claim 22, wherein the low reflection region has a lower reflectance than that of the substrate.